AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1   1. (Previously Presented) A method of storing data into a database, the method

2   comprising:

3   a client application receiving data;

4   determining one or more routines that are associated with a type of said data, wherein

5   said one or more routines are implemented by a program that is external to

6   both said client application and a database server that manages said database;

7   invoking said one or more routines;

8   in response to said one or more routines being invoked, said program performing

9   steps comprising:

10   determining one or more first values that are specified in said data, wherein

11   said one or more first values correspond to one or more attributes of

12   said type; and

13   determining one or more second values that correspond to one or more hidden

14   columns of one or more tables in said database;

15   generating, based on said one or more first values and said one or more second values,

16   a data stream that conforms to a format of data blocks of said database; and

17   writing said data into one or more data blocks in said database.

1   2.   (Original) The method of Claim 1, further comprising:

2   in response to said one or more routines being invoked, said program performing

3   steps comprising:

4   creating a data structure that comprises:

5   one or more first elements that correspond to said one or more

6   attributes; and

7   one or more second elements that correspond to said one or more

8   hidden columns;

9   populating said one or more first elements with said one or more first values;

10   and

11   populating said one or more second elements with said one or more second

12   values;

13   wherein said generating of said data stream is based on said data structure.

1   3.   (Original) The method of Claim 2, wherein said data structure is created in memory

2   that is associated with said client application.

1   4.   (Original) The method of Claim 1, wherein at least one of said one or more second

2   values is associated with said one or more first values and distinguishes said one or

3   more first values from other values in said data.

1   5.   (Original) The method of Claim 1, wherein at least one of said one or more second

2   values describes a position of said one or more first values relative to other values in

3   said data.

1   6.   (Original) The method of Claim 1, wherein a number of attributes of said type is not

2   defined to said client application.

1   7.   (Original) The method of Claim 1, wherein a type of an attribute of said type of said

2   data is not defined to said client application.

1   8.   (Original) The method of Claim 1, wherein said generating and said writing are

2   performed without causing a Structured Query Language (SQL) engine to load said

3   data.

1   9.   (Original) The method of Claim 1, wherein determining said one or more routines

2   comprises locating addresses of one or more routines that are in a same entry as an

3   identity of said type.

1   10.   (Original) The method of Claim 1, further comprising:

2   adding, to a table, an entry that indicates an association between said type and said

3   one or more routines.

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1   11.   (Original) The method of Claim 1, further comprising:

2   invoking one or more routines that are located at one or more addresses that are

3   associated with said type.

1   12. (Previously Presented) A method of storing data into a database, the method

2   comprising:

3   a client application receiving data that conforms to a first type definition that indicates

4   two or more first attributes, wherein at least one of said two or more first

5   attributes is of a type that is defined by a second type definition that indicates

6   two or more second attributes;

7   determining one or more first routines that are associated with said first type

8   definition, wherein said one or more first routines are external to both said

9   client application and a database server that manages said database;

10   calling said one or more first routines;

11   in response to one or more calls to said one or more first routines:

12   creating a first data structure with two or more first elements that correspond

13   to said two or more first attributes; and

14   populating said two or more first elements with two or more first values that

15   are specified in said data, wherein said two or more first values

16   correspond to said two or more first attributes;

17   calling one or more second routines that are associated with said second type

18   definition;

19   in response to one or more calls to said one or more second routines

20   creating a second data structure with two or more second elements that

21   correspond to said two or more second attributes; and

22   populating said two or more second elements with two or more second values

23   that are specified in said data, wherein said two or more second values

24   correspond to said two or more second attributes;

25   generating, based on said first data structure and said second data structure, a data

26   stream that conforms to a format of data blocks of said database; and

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27   writing said data into one or more data blocks in said database.

1   13.   (Original) The method of Claim 12, further comprising:

2   generating a set identifier that is associated with one of said one or more first

3   elements; and

4   populating a plurality of elements in said second data structure with said set identifier.

1   14.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 1.

1   15.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 2.

1   16.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 3.

1   17.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 4.

1   18.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 5.

1   19.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 6.

1   20.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 7.

1   21.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 8.

1   22.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 9.

1   23.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 10.

1   24.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 11.

1   25.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 12.

1   26.   (Currently Amended) A <u>volatile or non-volatile</u> computer-readable ~~storage~~ medium

2   carrying one or more sequences of instructions which, when executed by one or more

3   processors, causes the one or more processors to perform the method recited in Claim 13.